

## IN THE CLAIMS

Please amend claims 21 and 22 as follows:

1.-20. (Cancelled)

21. (Currently Amended) A method of inhibiting methylation of DNA comprising

contacting a DCMTase with a synthetic inhibitor molecule so as to form an enzyme/synthetic inhibitor molecule complex ~~in the presence of~~ that contacts the DNA,

wherein the synthetic inhibitor molecule comprises a C-5 methylcytosine which recognizes and binds an allosteric site on DCMTase, thereby inhibiting DNA methyltransferase activity.

22. (Currently Amended) A method of inhibiting proliferation of cancer cells comprising

administering to a subject a synthetic inhibitor molecule that comprises a C-5 methylcytosine which recognizes and binds an allosteric site on DCMTase thereby resulting in an enzyme/synthetic inhibitor molecule complex that contacts DNA,

the presence of the complex inhibiting DCMTase-mediated methylation of DNA, thereby inhibiting proliferation of the cancer cells.

23. (Previously Presented) The method of claim 22, wherein the cancer cell is from lung, breast, prostate, pancreas or colon.

24. (Previously Presented) The method of claim 21, wherein the synthetic inhibitor molecule is a synthetic oligonucleotide comprising a C-5 methylcytosine and which recognizes and binds an allosteric site on DNA cytosine methyltransferase (DCMTase) thereby modulating DCMTase activity associated with the allosteric site.

25. (Previously Presented) The method of claim 22, wherein the subject is a human.

26. (Previously Presented) The method of claim 22, wherein the subject is an animal.

27. (Previously Presented) The method of claim 26, wherein the animal is porcine, piscine, avian, feline, equine, bovine, ovine, caprine or canine.

28-31. (Cancelled)

32. (Previously Presented) The method of claim 22, wherein the synthetic inhibitor molecule is a synthetic oligonucleotide.

33. (Previously Presented) The method of claim 24, wherein the subject is a human.

34. (Previously Presented) The method of claim 24, wherein the subject is an animal.

35. (Previously Presented) The method of claim 34, wherein the animal is porcine, piscine, avian, feline, equine, bovine, ovine, caprine or canine.

36. (Previously Presented) The method of claim 21, wherein the synthetic inhibitor molecule comprises an oligonucleotide having the nucleotide sequence shown in SEQ ID NO: 15.

37. (Previously Presented) The method of claim 22, wherein the synthetic inhibitor molecule comprises an oligonucleotide having the nucleotide sequence shown in SEQ ID NO: 15.

38. (Previously Presented) The method of claim 21, wherein the synthetic inhibitor molecule comprises an oligonucleotide having the nucleotide sequence shown in SEQ ID NO: 10, 13 or 14.

39. (Previously Presented) The method of claim 22, wherein the synthetic inhibitor molecule comprises an oligonucleotide having the nucleotide sequence shown in SEQ ID NO: 10, 13 or 14.